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AMERICAN GAS ENGINEERING JOURNAL

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KOPPERS

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The most efficient method of carbonizing coal is in KOPPERS OVENS and the best coke and by-products are produced by this process.

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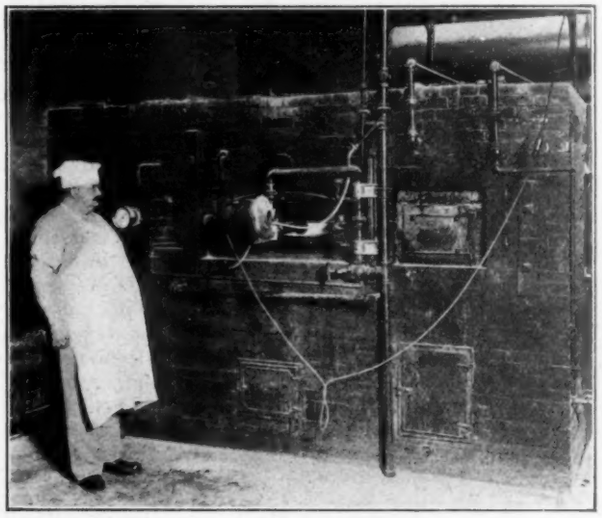


FIG. 3. FURNACE TYPE BAKE OVEN EQUIPPED WITH GAS BURNER

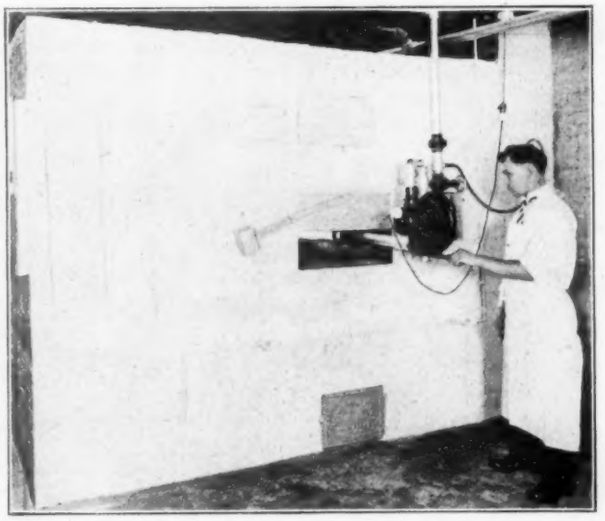


FIG. 2. TYPICAL "DUTCH" OVEN HEATED BY FAN-FLAME BURNER

Sanitary Legislation Throughout Country Tending Towards Making Use of Gas in Dutch Bake Ovens Imperative

Scarcity of Slab Wood a Contributary Circumstance—Relatively Large Saving in Labor—Bray Burner Tip Principle Utilized to Produce Flat Flame—Indorsement of Gas Firing from State Bakery Inspector

By BRUNO RAHN
Industrial Engineer, Milwaukee Gas Light Company, Milwaukee, Wis.

The steady increase in the price of slab wood due to the growing scarcity of this type of fuel in the immediate vicinities of our large cities, together with the prevailing tendency of gas companies toward the adoption of step rate schedules have made it possible for the industrial gas salesman to exploit a new field heretofore scarcely touched; namely, the heating with artificial gas of inside brick bake ovens, such as are found in common use in almost every medium-sized bake shop. Another important factor, which greatly aids the introduction of gas for this purpose, which in fact in some cases makes the use of gas practically imperative, is the adoption by legislatures in most states throughout the country of strict sanitary regulations applying to establishments of this kind.

Construction of Dutch Oven

The construction of a typical Dutch or German oven is shown diagrammatically in Fig. 1. The oven consists essentially of a foundation, skeleton walls, the baking chamber proper, return smoke flues and insulating materials. The foundation, as a rule, is built

of concrete or stone, forming a footing course upon which the brick skeleton walls, usually 17 in. in thickness, are erected.

The baking chamber consists of a hearth surface of square fire tile and a brick fire arch, both of which are directly exposed to the fire during the heating period. Three or four take-off flues, depending on the size of the oven, are provided in the arch at the rear of the oven.

These flues are brought forward into a transverse large flue which in turn leads to the smoke stack. At the point of entrance into the transverse flue, each flue is provided with a sheet iron cap, which can be removed during the firing period of the oven, and with which the flues are closed during the baking period in order to assure the retention of the maximum amount of heat by cutting off all circulation of cold air from the baking chamber.

An attempt at insulating the baking chamber is made by means of layers of white sand under the hearth surface as well as on top of the arch and around the fire brick flue chambers.

The oven also is provided with an ash pit, a suitable door opening to the baking chamber, a similar door opening in the transverse flue chamber, through which the flue caps are manipulated, and in some cases with a stack damper.

A popular modification of this type of oven is the so-called "Furnace Oven," an illustration of which is shown in Fig. 3. As the name implies, the furnace oven usually is provided at the right side of the baking chamber, with a furnace compartment having a grate surface on the same level with the hearth. Such ovens, in addition to the rear flues, as described, have a forward flue located in the upper left hand corner of the arch. This flue is controlled by a separate damper. The former type of oven originally was designed to be heated with slab wood exclusively, while the furnace oven affords an opportunity for firing with either wood, coal or coke. Both types, however, present excellent opportunities for gas firing. As shown in the illustration, the baking chamber is rectangular in shape, varying in width from 7½ to 10 ft. and in depth from 9½ to 14 ft., with a corresponding height of arch, ranging from 9 to 14 in.

Method of Firing with Wood

The method of firing ovens of this type with wood is in short as follows: All damper caps are removed from the return flues and the door to the transverse flue is closed. A certain quantity of wood is then piled through the oven door on the front part of the hearth in an even layer and ignited, the stack damper being wide open. The wood will burn slowly with more or less evolution of smoke and soot, depending upon the draft and outside weather conditions. After combustion is complete, the glowing ashes are then removed from the hearth by means of an iron hoe. The caps are then replaced, closing the return flues and the door to the baking chamber is also closed. Owing to the overheating and spot heating of the hearth tile, the oven is allowed then to "settle" or "stand off" for a period varying from one hour to an hour and a half. Equalization of heat takes place during this time and the temperature throughout the baking chamber having become fairly uniform, the oven is ready then for baking. As most articles such as bread and rolls are baked directly upon the hearth, it becomes essential that the latter shall be absolutely clean and free from any ashes or embers. Before proceeding, therefore, the baker must sweep the hearth carefully, after which he takes his "swab stick," a long pole, to one end of which a rag

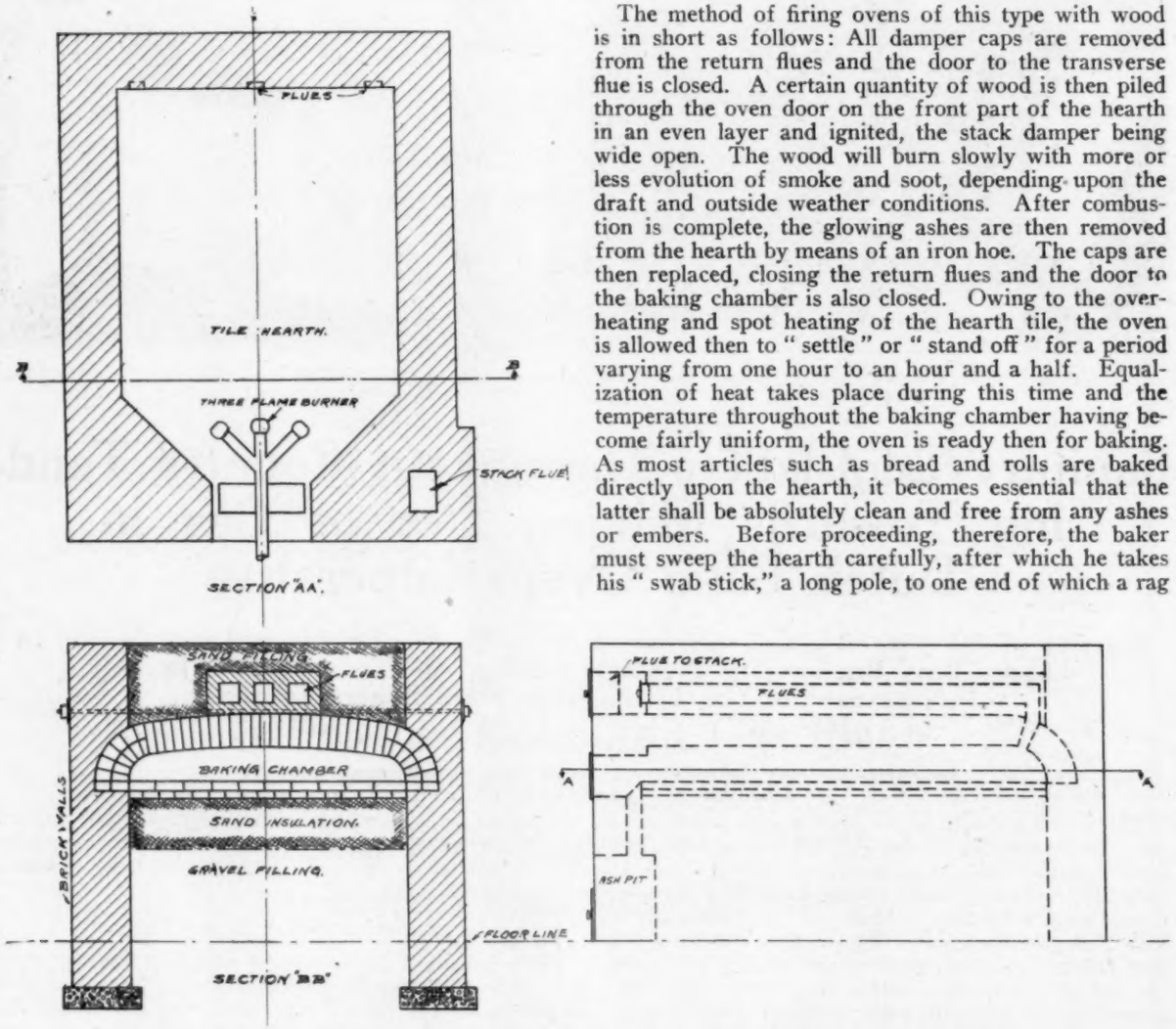


FIG. 1. CONSTRUCTION DETAILS OF TYPICAL DUTCH OVEN SHOWING GAS EQUIPMENT

or mop is fastened, dips the latter into a pail of water, called the " swab pail," and thoroughly mops or swabs out the entire baking chamber, stirring up considerable dust and dirt.

The entire operation of heating an oven with wood including the period of " settling " the oven, takes approximately between 3½ to 4 hours and requires considerable attention during this time on the part of the workman. The average baker heats the oven twice during a 24-hour period, the first heating taking place at midnight and the second about seven or eight o'clock a. m. The work of raking ashes, sweeping and swabbing the oven must likewise be performed at least twice during this period.

Firing with Gas Fuel

The method of firing with gas, from the standpoint of labor saving, cleanliness and sanitation, recommends itself to the baker immediately and, though the fuel cost may be higher, most bakers are willing to pay a reasonable bonus in recognition of such advantages.

The application of the fan blast burner for firing ovens of this type constitutes probably the simplest and most efficient method as regards operation and fuel economy with artificial gas at ordinary pressures. The burner, with direct connected motor and fan blower attached, is mounted by means of brackets to a steel plate, which is anchored firmly to the brickwork of the oven.

Suitable swing joints allow the burner to be swung into the mouth of the oven as well as permit its position to be changed when introduced in the baking chamber, so that the entire chamber hearth and arch surface can be well heated. After starting the motor fan by turning on an ordinary socket switch and opening the gas valve, the mixture of gas and air is ignited by means of a suitable pilot light. The entire operation of swinging the burner into position in the oven and lighting it takes less than a minute. The heating of the oven then takes place automatically, it being necessary, however, to change the position of the burner four or five times during the firing period. When the proper heat is obtained gas and air are shut off, the burner is swung out of the oven and the operation is complete.

The design of the burner nozzle embodies the principle of the " Bray " Burner tip so as to produce a flat flame.

Single flame, double flame and three-flame burners (see Fig. 1) are employed, depending largely upon the size of the oven or the amount of baking, which is to be accomplished with one heating of the oven.

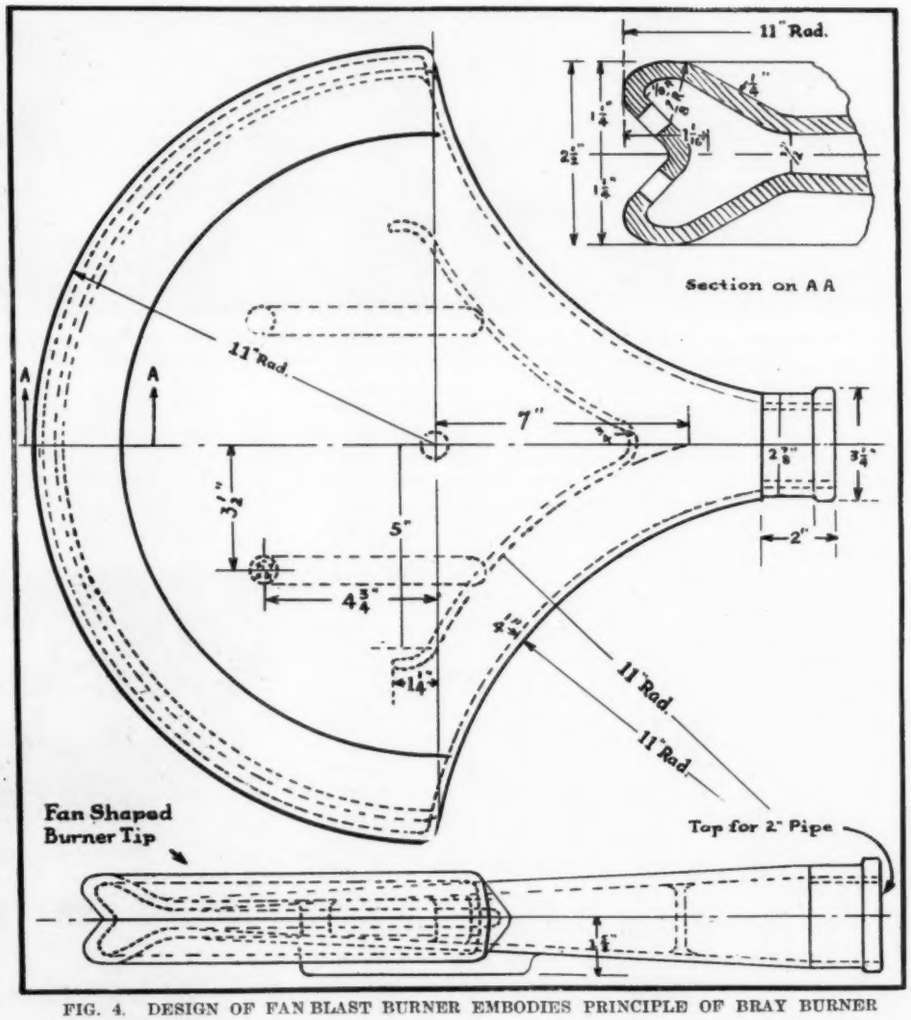


FIG. 4. DESIGN OF FAN BLAST BURNER EMBODIES PRINCIPLE OF BRAY BURNER

There are, however, exceptional cases which require specific solution. The writer recollects a particular case, where a bake shop was required to produce a considerable baking with one heating in a comparatively small-sized hearth oven.

The three-flame burner, while heating the oven uniformly, did not seem to produce a lasting heat. For this purpose a special fan-shape burner tip was designed, illustrated in Fig. 4, which produced the desired result.

Another installation of this kind is illustrated in Fig. 5.

While the manipulation of the gas apparatus is comparatively simple, some judgment is required on the part of the operator as to the proper arrangement of the draft when firing with gas. It must be remembered that such ovens were designed originally for wood firing and that all flue areas were proportioned accordingly. Furthermore, as air blast is being furnished to the gas burner, but little draft is required to allow waste gases to properly escape from the oven.

When heating with gas, therefore, the stack damper need only be open far enough to prevent smothering the gas flame. It also is advisable, where the oven is pro-

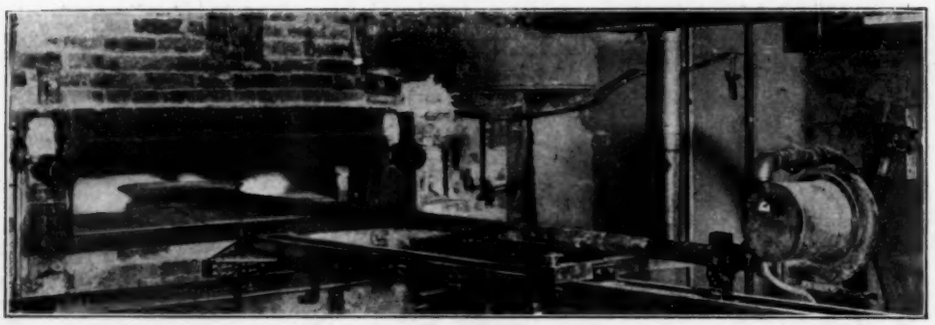


FIG. 5. FAN-SHAPED GAS BAKE OVEN BURNER IN OPERATION—NOTE FLATNESS OF FLAME AND SWING JOINTS WHICH FACILITATE CHANGING OF ITS POSITION

vided with return flues, to remove but one, or at most two, of the flue caps during the heating period, or to provide substitute caps with properly adjusted shutter arrangement. When drafts are too strong, most of the heat will be drawn to the rear of the oven, or escape through the stack flues, before having performed sensible work, resulting in fuel waste and improper heating of the baking chamber. Where ovens are of moderate depth, a three-flame burner can be used to greater advantage than the single-flame burner, resulting in more even and efficient heating of the baking chamber. However, such an arrangement becomes more sensitive as the flames are apt to fire back. This practically can be overcome by introducing a suitable screen into the mixing tube of the burner. One hour to one hour and a half is usually sufficient time for firing an oven with gas. Flue caps are then replaced, the oven door is closed and the oven is allowed to "stand off" for a period varying from 45 minutes to one hour, the entire operation thus requiring not more than two and one-half hours.

Comparative Costs of Gas and Wood

In a bakery with a German inside oven, where two or three men are employed, from two to two and one-half cords of hard wood is used per month, which at $7.50 per cord would amount from $15.00 to $19.00. Gas to do a corresponding amount of baking, figured at an average rate of 60 cents per M would cost from $19.00 to $24.00 per month, an increase of about $4.00 or $5.00. These costs presume intelligent manipulation of the gas apparatus and efficient regulation of flue drafts. A conservative estimate as to time saved would be at least one-half hour per man each day, which, figured at 30 cents an hour on a basis of twenty-five working days per month, would amount to $3.75, a greater portion of the increased fuel cost.

Disadvantages of Wood Firing

The wood used must be carried into the bakery from the wood shed or the yard, must be partially dried in the oven and fired in two or three installments. Coal embers and ashes must be raked to the oven door and shoveled into the ash pit or into some other receptacle, and carried outside. While sweeping and swabbing out the oven, clouds of ash dust are stirred up, which the workman is compelled to breathe into his lungs. Working strenuously in front of the hot oven, he perspires profusely, and taking in this dust and dirt, he is very apt to "catch cold" or even worse.

Heating the oven with gas does away with all this. It eliminates the unclean "swab pail," often filled with fetid water. The advantage of gas fuel becomes especially apparent, when during the day additional flash heats are desired.

Sanitary Appeal of Gas

The presence of vermin in the bake shop is a continuous source of annoyance to bakers. Insects of all species, especially black beetles, find their way readily into the bake rooms with the wood used for oven fuel. Conditions being ideal, they breed and multiply rapidly, often to such an extent as to cause the proprietor to come into conflict with inspecting authorities, which may result in fines and publicity detrimental to his business. The most despicable term, which enemies sometimes apply to small bakeries, is the term

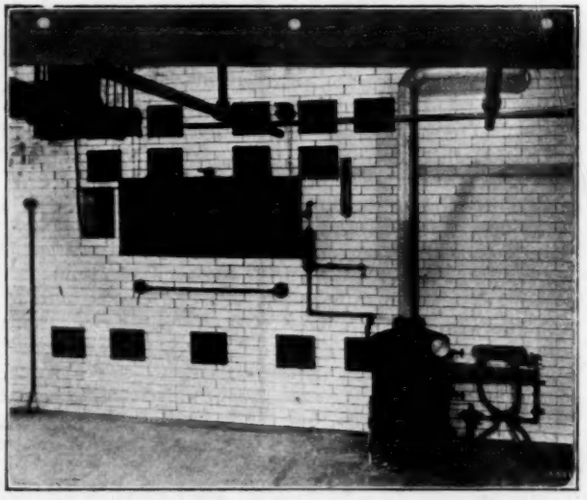


FIG. 6. GAS-FIRED STEAM GENERATOR IN BAKE SHOP

"cockroach bakery." A reputation for cleanliness and sanitary conditions is an enviable business asset for a small bakery to possess. The introduction of gas fuel for heating the oven is one way of bringing about such a result.

Most small bakeries are located in residence districts and are dependent upon the immediate neighborhood for trade. Wood firing of ovens is necessarily accompanied by the creation of dense smoke, heavily laden with soot, which, if not in direct violation of an existing smoke ordinance, nevertheless furnishes sufficient cause to the neighborhood for complaint. Ill feeling arises, culminating sometimes in legal proceedings in courts—damage actions are instituted—and trouble and expense is the result. Instead of dealing with satisfied patrons, who would do his publicity work for him gratis by advertising his goods and his business methods, the baker finds himself confronted with discontented customers complaining of smoke nuisance, resulting in loss of trade and good will. Contented neighbors are the small baker's best advertising force. They will appreciate the fact that their baker fires his oven with gas, that no dust, no ashes, no smoke and

no vermin is to be found in his bakery. They will render him ready acknowledgement by giving him publicity of the right sort, advertising, for which large bakeries annually spend vast sums of money.

It is a well known fact that in wood fired ovens the maintenance of the hearth is quite a source of expense. Swabbing the hot tiles with mops dripping with water causes them to crack and disintegrate very rapidly. The hearth must be repaired usually once each year and a complete renewal of hearth tile is imperative after two years. A conservative estimate of this item of expense would be at from $18.00 to $20.00 per oven, using twenty-four cords of wood and fired by hired help. With gas fuel properly used, the life of the hearth would be the same as that of the oven.

Additional Advantages of Gas

Where gas is used, no storage room for wood is needed, resulting in gain of floor space, a desirable feature in crowded bake rooms. The expense incurred from chimney cleaning is eliminated. Fire risk is lessened where ovens are fired with gas, conflagrations often resulting from soot catching fire in chimney flues.

Most every bakery is provided with a gas service both for kitchen use and for store and house lighting. The introduction of gas fuel for oven heating therefore is an extension of an old service and, the demand being "off peak load," constitutes a very desirable class of business for gas companies. Additional opportunities are offered for the installation of confectionery furnaces for fried cake baking, as well as small steam generators for furnishing steam for bake oven. (See Fig. 5 and Fig. 6.)

C. J. Kremer, state bakery inspector of Wisconsin, speaking of this class of business states: "In bakeries with inside ovens, and to a slightly less degree with furnace ovens where wood is used for firing, gas for fuel ranks well with dough mixers as an aid to convenience, cleanliness and sanitation. Bakeries which use gas for fuel will be given the preference by a discriminating public and by discerning, desirable, cleanly, wide awake workmen, who strive to be efficient mechanics and not mere drudges of the bake house."

Accidents That Could Have Been Prevented

An employee's finger was crushed when she tried to move an electric fan that was in motion.

There is no excuse for an accident of this sort. Nobody should touch an electric fan in motion. The current should be turned off first. In this case the employee was very lucky, as she might have sustained a much more serious injury.

In attempting to close a retort lid with his hand instead of using the tool provided for that purpose, hot gases burned his hand.

This is another case where a painful accident could have been avoided by ordinary care.

While putting in a gas stove line, an employee stepped on a pipe hook that was lying on the floor and punctured his foot.

Pipe hooks should not be left on the floor. The danger of blood poisoning or tetanus from an injury of this kind is great.—*Safety News.*

Standard Appliance the Wedge by Which the Small Company May Best Get into Industrial Field

H. E. G. Watson Tells How He Would Go About Developing an Industrial Load in a Small Community

In the opinion of H. E. G. Watson, manager of the industrial department of the Consumers' Gas Company of Toronto, Ont., as expressed in his paper at the recent Canadian Gas Association convention, the real development of the industrial fuel branch has been confined mostly to large cities. He attributes this to the fact that the rates are low enough in such communities to offer on their face an inducement to the manufacturer to adopt gas for industrial purposes. The necessarily higher rates, on the other hand, in the small communities being somewhat discouraging at the outset. Also, unless a small company happens to be a link in a large holding or management organization, it has not seen its way clear to employ the calibre of man that is necessary to secure this class of business.

Optimistic as to Possibilities for Small Company

Though he enumerates these advantages in extending the industrial business in the smaller communities, Mr. Watson apparently is not so convinced that they are such real disadvantages as it would seem.

He quotes a successful industrial gas engineer to discount the pessimism of the small town manager to the prospects of industrial business. This man has claimed that any industry which uses heat obtained by the burning of any other fuel than gas can be legitimately considered as a prospective customer. Mr. Watson points out that in a typical community of from 15,000 to 30,000 people there are doubtless hotels, restaurants, candy shops, one or more laundries, machine shops, possibly a foundry and even manufacturing industries, large and small, upon which the city is depending for its existence as a city. He believes that every one of these may be classed as an industrial fuel prospect.

He discounted largely the desirable industrial man as pictured in contemporary literature, such as association papers, technical journal comments, etc. He considers that if there is a man in the company's employ who seems to get along well with the people he comes in contact with, who has a knack of getting at the bottom of things, has some ambition, a fair knowledge of English and a supply of common sense, such a man should be able to fill the bill as industrial man for the small-city company.

Preparatory Studies

As a means of preparing himself for the task, he recommends that this man secure all the available information he can on industrial installations that have been made, that he be given time to digest this information and work out his plans, and that he be supplied with copies of contemporary gas journals, so that he may keep in touch with developments as they are made, also that he clip and file articles from these which bear upon his particular work. From the advertising pages of these journals he should secure a list of the manufacturers of industrial gas appliances from whom catalogues should be obtained, studied and filed. All this matter should be indexed so as to be handy for reference.

This done he should begin his survey of the territory, starting with the hotels, stores and factories at present connected to the lines. He should not try too hard to

secure additional business, but should get familiar with the customers, their needs and their ways of looking at things. He should listen to their complaints and try in every reasonable way to see that they are looked after and the customer satisfied. After all existing customers have been visited he should start in on the others; find out what they are using heat for and as to their attitude towards taking service from the gas company. The industrial man should not be too anxious to make a quick showing, but Mr. Watson expresses confidence in the fact that before the survey is finished he will begin to doubt if it ever will be finished, as he will be so busy working on installations and on likely prospects.

Standard Appliances

It is certain that industrial appliances will have to be either sold by the gas company or direct by the manufacturer. They are seldom handled by dealers even in the larger cities. Great care should be taken that the appliances supplied are essentially fitted to its purposes. The beginner is cautioned against rushing too quickly into the matter of selling large, expensive appliances or furnaces made to order for some special purpose, but there is little chance of trouble supplying stock apparatus, which doesn't run into a large amount of money.

The first sales will be largely made from catalogues of appliances which neither the buyer or seller has seen. The difficulties, consequent, upon this course can be overcome to a great extent by allowing the industrial man to spend a few days in some cities where a large number of installations have already been made. It is advised that the company have permanent exhibits somewhere about its premises, and it would be a good idea to have some of these connected for demonstration, though the exhibit in itself will be found very useful, even if the latter course is not practical.

An exhibit consisting of some appliances, such as toasters, brazing blow-pipes, burners of various kinds, soldering furnaces and irons, glue heaters, tailor's irons, etc., can be made at comparatively little expense. Mr. Watson suggests that manufacturers would probably co-operate in supplying larger appliances, such as oven furnaces, soft metal and cauldron furnaces, candy stoves, baker's ovens, etc., for a temporary period, so that there can be a periodically changing exhibit at very small expense to the gas company if the appliances should not be sold.

Mr. Watson strongly advises that the small company stick to the placing of stock appliances and leave the problem work until more experience has been gained and even then to exercise caution.

Putting in Equipment on Trial

He is strongly opposed to putting in appliances on trial or approval. He advises rather that the industrial man make sure that he can supply the equipment that will fit the conditions, and then guarantee it to do the work at a certain cost.

He also advises where the equipment is very expensive it would be well to let the sale be made direct by the manufacturer, but the gas man should be at all times ready to co-operate with both parties. He doesn't advocate absolutely turning down the man who would want to make his own appliances or to put burners in a coal furnace, but he would not encourage it. Nine times out of ten this means that the appliance will be inefficient, thus making unduly high gas bills, discarding of the gas installations and eventual disgust with the use of gas; also undesirable publicity.

Not Necessary to Make Special Rates

In making the installation it is absolutely essential that services can be properly fitted for the work they must do. The appliances must be properly adjusted and the customer instructed how to use it. Satisfied purchasers are an essential to the growth of the industrial business.

Mr. Watson is skeptical as to the necessity or advantage of departing from the set flat rate to secure industrial business. He concedes that the company can sell large quantities of gas at less than regular rates, but contends that in the present state of the industry, if it were not for the large aggregate domestic consumption the gas company would not be in position to supply the manufacturer even at its present rates.

He speaks a word for the man who is to be selected to handle the industrial end. He strongly advises that he be hampered and restricted as little as possible. It is imperative that he appear efficient and prosperous, and Mr. Watson points out that in these hard times it is hard to appear prosperous merely on large expectations.

Defends "C" Process for Extracting Light Oils

Contention is that English Companies Under Belief that Demand Would Be of Short Duration Acted Wisely in not Going to the Expense of Immediately Adopting Oil Washing

By Norton H. Humphrys

Judging from the reports of the discussion on increased production of light oils from Town Gas, at the June meeting of the American Gas Institute (American Gas Engineering Journal, June 30, page 630)—some misapprehension exists as to the use and application of the "C" process by the engineers of gas works in Great Britain.

So far from any desperate or ill-considered haste in adopting the process, there was much hesitation and caution. The suggestion that gas should be washed in cold tar was a direct contradiction of established views and practice, which aimed at the removal of at least all the heavy portions of the tar from contact with the gas at a temperature of not less than 100 deg. Fahr.; therefore doubts as to its practicability were general. There was a strong impression that its adoption would raise a howl of indignation from the consumers throughout the district, and that heavy penalties for deficient illuminating power would be incurred.

Opposition arose from municipal authorities as the representatives of the consumers (in districts where they did not happen to own the gas undertaking), who urged all sorts of wildcat stories as to depreciation in the practical value of the gas, and claimed reductions of price in proportion to, and on the basis of such assumptions; which was not reasonable, seeing that the gas companies get no profit out of the "C" process.

They overlooked the fact that as the proposed extract amounted to less than a pint per 1,000 cu. ft. of gas, a very high figure must be obtained for it before the profit could be represented in terms of the price per 1,000 cu. ft. of gas.

And some competent gas engineers held views as to effect on illuminating and calorific value, that have since proven to be greatly exaggerated. Like many

other experiences during the last three years, there was no precedent in practice, and assumption went wide of the mark.

It was not until the Government suspended the penalty clauses relating to illuminating power, that undertakings under stringent conditions were in a position to adopt it, though some took the chance, relying on the fact that they were not seeking additional profit, but the public welfare, as a sound defence.

As a remedy for the indisposition to take up the process, the Ministry of Munitions appointed competent district inspectors to make a works to works visitation throughout the country, discuss difficulties and objections with the responsible official on the ground, suggest methods of utilizing existing plant, and generally encourage its use.

They are furnished with full practical details as to capabilities and limitations, which have fully stood the test of prolonged experience. The principles concerned are to a large extent matters of common knowledge, and in no sense has adoption of the process been attended with unexpected or disappointing results (except as a consequence of incompetent application or working), as a temporary expedient for immediately increasing the yield of light oil from the gas. More than that was never claimed.

Real Reason Why Oil Washing Was Subsequently Adopted

There are about 1,000 small gas works in the United Kingdom that are not in a position to adopt oil washing as a separate department. I know by practical experience that it is quite possible to increase the proportion of light oils in the tar four-fold, from two pints per ton of coal carbonized, to one gallon, of which 25 per cent will be pure toluene. This is not a negligible quantity. A moderate estimate of the coal consumption is an average of 2,000 tons per annum, an aggregate of 2,000,000, representing a similar number in gallons of crude light oil, or 500,000 gallons of pure toluene.

The use of tar for the extraction of benzol from town gas is not new. It was proposed and patented some thirty years ago, at a time when benzol was going strong. But for an effective quietus in the shape of a decided slump, no doubt more would have been heard about it.

To understand the reasons why oil washing has been subsequently adopted by gas works in a position to provide the necessary additional plant and skilled supervision, one must go back to the prevalent opinions during the latter half of 1914. We have learned a great deal since.

At that time the probable duration of the war was reckoned in months and even weeks, and it was thought that an immediate if temporary expedient would meet the case. But in the spring of 1915, when we learned that an early settlement was not probable, gas engineers began to consider the possibility of a more effective and more remunerative scheme, free from the liability to increase naphthalene content in the gas, which was an occasional experience with the "C" process. They knew that not more than 15 per cent of the tar handled was doing useful work, and the distillers were not willing to offer more than a very inadequate allowance for the extra light oil in the tar.

Those who were able to do so, erected oil scrubbers, store wells for used and for debenzolized oil, circulating pipes, debenzolizing plant, and even rectification stills. Others, who by force of circumstances were not in a position to erect a new plant, continued to use the "C" process, which is widely adopted as a valuable adjunct in the production of light oil.

Given apparatus of ample size, moderate temperature, both of gas and tar, and a water content of not more than 3 to 4 per cent in the washing fluid, quite one-third of the total light oil content, including a larger proportion of the total toluene, can be transferred from the gas to the tar; and in many cases, there are reasons why it is impracticable to strip the gas to a greater extent.

Need of Additional Plant for Oil Washing

Some degree of sacrifice in respect to expense, convenience, and efficiency, is possible with a temporary make-shift; but acquires importance when it becomes evident that the expedient, intended for a few months, will be needed for some years, if it does not offer fair prospect of permanency. Under such circumstances, outlay on new plant may be considered, to an extent that would be unremunerative over a short term. And even after the war there will be a large demand for light oils. A special advantage claimed for the "C" process was that it could be adopted to existing plant. I never heard that additional apparatus was advised. But oil washing is practically the same thing as a new purifying department. The whole fit-up is additional to the existing arrangements.

The "C" process has been useful both as a buffer and as a pioneer. It would be a bold engineer who would accept the responsibility of an immediate jump from say an 18 candle, to a completely stripped gas. It has enabled practical tests as to the effect of stripping from the consumer's point of view, introduced tentatively and in such a manner as to avoid risk of trouble in the district.

It has elicited the fact that while the illuminating value of the gas may be reduced to the extent of two-thirds, the calorific value does not suffer more than 10 per cent.

We have long recognized that illuminating power is a very small matter compared with calorific value and flame temperature. Only a small percentage of the consumers use flat flame burners, and that only intermittently, for lights that are so seldom wanted that an incandescent is not worth while, or in small passages or stores where a brilliant light center is not a necessity.

Calorific value and flame temperature are the chief requirements, and the last named cannot but be benefited by the removal of heavy hydrocarbons that require a complement of thirty to forty times their bulk of air, to ensure complete combustion, which includes nearly 80 per cent of useless nitrogen, a gas that simply acts as a temperature diluent. And in cold weather the hydrocarbons cause trouble by condensation in the pipes.

Small Diameter Pipe in Ground Over 80 Years Could Be Put Back Into Service Without Any Difficulty

Some time ago the Louisville Gas Company removed a piece of ¾-in. diameter cast-iron pipe from service which had been in the ground over 80 years, yet is in such condition that it could be put back into the line to-day without any difficulty. The pipe is cast in 3-ft. lengths and has threaded joints. The piece is in the possession of N. F. S. Russell, general sales manager of the United States Cast Iron Pipe & Foundry Company.

Multiple Bunsen Burner Designed to Provide Heat for Pittsburgh Hotel

An All-Year Load, Using Gas 24-Hours Per Day—Supply All Heat for Building in Cold Weather, and Hot Water

In a paper read before the Engineers' Society of Pennsylvania, J. C. Hobbs, of the Duquesne Light Company, gives the following description of a gas-heating installation that has a unique interest in that its efficiency is attributed principally to the burner design.

The installation is located in the William Penn Hotel, Pittsburgh, and has a capacity of 4,000 to 5,000 boiler horsepower. Service is maintained 24 hours of the day and 12 months of the year to take care of buildings, which, in addition to heat, require hot water or have ice machines. The load factor, or ratio of the average demand to the maximum demand, is 25 per cent for heating service only.

Longitudinal and Cross-Drum Boilers

The first two boilers installed were of the longitudinal type and were baffled with a special vertical baffle built of a high temperature cement. The economy obtained was good at first, but it was soon found that the cement was falling out and the stack temperatures were going up.

The reason that the standard three-pass baffling was not used is that with gas fuel a very small intensity in the furnace is required. Instead of reducing the draft intensity by damper regulation, it was decided to draw the gas over a longer path and to impinge it against the tubes at a higher velocity so more heat would be extracted from the products of combustion, and a higher efficiency obtained.

Later two boilers of the cross-drum type with horizontal baffles were installed. On account of the chances of forming a dirt pocket at the rear of the second pass their settings are not recommended for coal, but horizontal baffling has been used quite successfully with and without the addition of some device or arrangement for the removal of dust from the pockets. The simplicity and ease of installation and renewals make this type particularly attractive.

Burner Design

The design of the furnace for gas was determined almost entirely by the conditions present in this particular installation. The burner being most important to combustion, most of the investigation was spent on it. Pittsburgh designs were entirely discarded and only the basic principle of the burner design found in West Virginia was used. The reasons why the commercial burners on the market were not used, according to Mr. Hobbs, are:

The air and gas could not be easily controlled with any degree of certainty.

At low ratings or with low gas pressure, trouble from "burning back" is experienced.

When the burner is shut off, all of the air cannot be shut off, most of the burners having a secondary supply of air to prevent the end of the burner from being burned.

The secondary air principle is wrong, and tests of the mixing feature of the burners themselves, by the use of smoke and bridge wall temperatures, showed that the air through the center of the burner was really a cold core and the stream lines were not broken up.

The initial cost of the commercial types is prohibitive and the cost of renewals is high.

In the design an endeavor was made to overcome all of the above objections and, up to date, the results have shown that it is a success. The points on which stress was laid were the control of gas and air and the thoroughness of their mixing before entering the furnace without allowing the flame to flare back. Both the air and gas are under the operator's control, and though the gas and air are kept separate to within a few inches of the furnace an intimate mixture is obtained.

Control of Mixture

No attempt was made to make the gas and air control entirely automatic, for, it is stated, it has been found that the time required for gas and air adjustments is small and it is believed the advantage of simplicity is sufficient to offset the cost of hand operation.

The adjustments for the correct ratio of gas and air are determined by use of a single "U" tube. This is connected to the gas chamber between the control valve and the mixing nozzles. The correct position of the air damper has been determined by special and operating tests and for the sake of simplicity the damper is marked so its position is indicated by the same figure which represents the gas pressure. The air supply is determined by the position of the air damper, as the drop in pressure from the boiler room to the furnace is maintained constant at 0.10 in. of water. This figure was a compromise between a high draft loss through the burner with the disadvantage of increased leakage loss through the setting, and a very low draft loss which changing slightly would cause excessive changes in the air supply.

No Checker Work Used in Setting

The brick work is simple. The side walls are plain, but contain insulating brick between the fire brick and the red brick and no checker work is used. With vertical baffles the bridge wall, which was pushed back to give more combustion space, was reinforced by a series of V-shaped pilasters, giving more contact surface to the flame and assisting the mixture of gases. With the horizontal baffling a medium height bridge wall slightly raised in front of each burner is used.

It would seem with gas fuel that usual figures of cubic feet of combustion space per horsepower for complete combustion are all too high, and it is doubtful whether the question of volume is very important. The two controlling factors of combustion are temperature and mixture. Mixture is the one which must be given most consideration. If a gas pipe two or three inches in diameter were opened directly into the furnace, it is likely that the flame would extend almost entirely through the different passes of the setting, because the mixing would be very poor. If, on the other hand, the whole front of the furnace were composed of Bunsen burners, it is likely that the combustion would be completed within a few inches and certainly within two or three feet of the burners. These are extremes, but illustrate the principle. The burner adopted is in reality a multiple Bunsen burner.

Economy of Operation

The plant is not very old, but regular operating performance has proved there is merit in the installation. The average monthly efficiency obtained in actual operation from October, 1916, to and including April, 1917, follow. This data is in a way the result of a continu-

ous test. A statement is made up every eight hours showing the essential facts for that period. Every pound of water to the boilers is weighed, every pound of water blown or allowed to leak through the blow-down is weighed and deducted, and every cubic foot of gas is metered. Even the radiation from the pipe lines within the plant is charged to the boilers and every pound of this is deducted from the output.

Months	Average efficiency Per cent	Months	Average efficiency Per cent
October, 1916	78.9	February	83.5
November	77.2	March	78.0
December	78.4	April	78.2
January, 1917	85.2		

Gas analyses are not made continuously or even periodically because with the positive burner arrangement they do not seem necessary. In tests to determine the best burner arrangement the analysis was: CO_2, 11.4 per cent; CO, 0.0 per cent; O_2, 0.9 per cent; N, 87.7 per cent. When an attempt was made to further reduce the air CO began to form. The percentage of CO_2 seems low but the theoretical maximum is only a little over 12 per cent.

During the months of October to April, inclusive, the average monthly efficiencies were never lower than 77 per cent and some times as high as 85 per cent. These efficiencies do not appear very high when compared with guarantee figures for coal (which allow for ash pit losses) of 73, 75 or 76 per cent at the most economical load, but neither do they represent a few hours or even a day but are the averages covering a whole month. They are what has actually been accomplished by the regular operators who attend to other matters beside economy.

Patents Pertinent to Gas Industry

Acetylene Generator Works by Means of Counterbalances

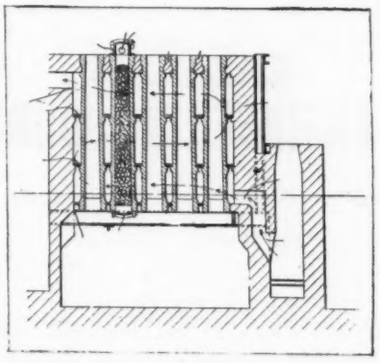
Patent No. 1,227,974; described in Patent Office *Gazette*, May 29, 1917, page 1476. Charles Brewster Steele, New York, N. Y. Filed Apr. 16, 1908. Serial No. 427,511. (Cl. 48-41.)

This acetylene generator consists of a water container with an inside gas holder. The carbide holder is in turn inside of the gas holder, flexible connections between the two passing over pulleys. The carbide holder is so weighted that when charged it is of greater weight than the liquid receptacle when charged with the proper amount of water.

Appliance Cock Equipped with Adjustable Cap

Patent No. 1,225,012; described in Patent Office *Gazette*, May 8, 1917, page 367. Emil L. Claus, Milwaukee, Wis. Filed Nov. 16, 1914. Serial No. 872,274. (Cl. 67-121.)

An adjustable cap having longitudinal angular grooves is placed on the outlet end of this gas cock. Located in the cock is an orifice closing member which has a slidable bearing in the grooves, and which has ends conforming in shape to and adapted to fit the discharge openings in the cap.



Process of Gas Manufacture Consists in First Making Coal Gas and Then Water Gas

Patent No. 1,228,879; described in Patent Office *Gazette*, June 5, 1917, page 172. Julius Bueb, Dessau, Germany. Filed Oct. 11, 1913. Serial No. 794,549. (Cl. 48-210.)

This process consists in distilling coal in a vertical silica retort and admitting water vapor or steam into the retort at the end of the gasification period, thereby generating water gas and reacting with water gas on the tar remaining in the coke.

Small Gas Fired Burner Equipped with Thermostatic Valve Control

Patent No. 1,227,879; described in Patent Office *Gazette*, May 29, 1917, page 1443. Sydney George Gardiner Brookman, Bristol, England. Filed Apr. 7, 1915. Serial No. 19,767. (Cl. 236-6.)

The gas valve is operated by thermostatic means. A chamber encloses the thermostat and pipes lead to and from this chamber. The pipe leading to the chamber is connected to the boiler on the steam side, and the piping leading from the chamber is open to the atmosphere. When steam is generated in the boiler the valve is operated to cut down the gas supply.

Acetylene Generator Provided with Propellers to Mix Sludge

Patent No. 1,228,302; described in Patent Office *Gazette*, May 29, 1917, page 1582. Charles A. Duncan and George L. Shoup, Duluth, Minn., assignors to American Carbolite Company, Duluth, Minn., a Corporation of Minnesota. Original application filed Jan. 15, 1913. Serial No. 742,301. Divided and this application filed June 25, 1915. Serial No. 36,332. (Cl. 48-57.)

This acetylene gas generator consists of a tank with a rotary carbide feed in its upper end. A transverse shaft is located close to the bottom of the tank, with two propeller wheels carried by the shaft. These propellers mix the sludge with the water.

Water Heater May Be Swung Over Stove Burner

Patent No. 1,225,834; described in Patent Office *Gazette*, May 15, 1917, page 686. James A. Little, Bismarck, N. D. Filed Aug. 26, 1916. Serial No. 117,053. (Cl. 126-357.)

This device may be fastened to the side of the range and swings over the burner. Flexible tubes connect this heater with the water reservoir.

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Adapting Our Methods to Meet Existing Conditions

Various gas-company managements have looked with glistening eyes upon the possible markets afforded by the great military encampments that are springing up throughout the country. Some companies have secured considerable of the business. Others have not. One company whose supply lines run through the heart of an encampment is numbered among the latter. As a result we have heard some complaint as to governmental red tape, etc.

The AMERICAN GAS ENGINEERING JOURNAL can have very little sympathy with this attitude.

It must be remembered that our soldiers up to this time have been located either in permanent garrisons or places where gas is an unknown convenience. It is not surprising therefore that the types of cooking equipment authorized for field service do not take gas into account. Nor is it surprising that with the vast amount of more important matters to occupy its thoughts that the military establishment has not adapted its regulations to suit.

One ambitious gas man came face to face with these conditions when he sought to install gas at a relatively small encampment. He was informed that the camp authorities were not authorized to buy gas ranges and that they were limited on the fuel allowances. If he were to secure the business he had his choice of one of two alternatives: Either to get the War Department to modify its regulations or to modify his requirements. The first would have taken some time. Perhaps the soldiers he sought to serve might be "somewhere in France—or in Germany—before the modifications were made." He adopted the sensible course.

He installed gas burners free in the soldiers' coal ranges and agreed to keep within the fuel allowance. As a result he got the business in this small, temporary encampment which led to the business of other small encampments and a big cantonment as well.

We should be chary of complaining too energetically of the "red tape" methods of others, while our own business is yet hampered by similar drawbacks, on the "people-who-live-in-glass-houses" principle alone, if for no other. Besides there is no "red tape" barrier that is so rigid that it cannot be gotten around if one has a real service to offer and will use his head in offering it.

This journal does not think the ambitious gas man it has referred to is going to lose money on the deal he has made. Experience has already shown that he can keep within the governmental fuel allowance, and the burners he has installed free will not be considerably the worse for wear when they have served their intended purpose. Labor will be the most considerable item involved in this transaction, and even a big labor item will be lost in a consumption that may range from close on to 100,000 cu. ft. of gas per hour.

Doing the Work of the Street Cleaning Departments

A somewhat amusing difference of opinion, between Herbert C. Hoover on one side and the incineration-division salesmen of the Peoples Gas Light & Coke Company of Chicago on the other, came to light in our news columns last week. Statistics reveal that Chicago's garbage collections for July of this year amounted to 11,000 tons as against 14,000 tons for the same month of last year. The National food administrator attributes this to response to the campaign of elimination of waste on the part of the housewives. The incinerator-division men are skeptical. They blandly direct attention to the number of gas-fired incinerators that have been sold during the year.

Without taking it upon itself to decide which party to the controversy is right, the AMERICAN GAS ENGINEERING JOURNAL feels secure in stating that the incinerators have had at least a part in the reduction, and to take pride in the fact that here at last is something tangible to point to as an advantage in the general adoption of domestic garbage incineration.

In the light of common sense it does not matter where we spend our money for the necessities of life, if we get a dollar's value in return for the dollar spent. The removal of its garbage costs every family in the community so much money every year—even the apartment dweller. If through the general adoption of incineration the people of a city do away with the necessity of public garbage collection and disposal, they merely change their point of payment, giving the money to the gas company instead of to the city in the form of taxes, either direct or indirect it does not matter. How the amounts of these payments would compare is a matter we are not prepared to discuss. But of the advantages of domestic incineration there can be very few doubts.

Take the apartment dweller. His food and his garbage travel the same route—the dumb waiter. At 5:46 p. m. it may go down loaded with several cans of garbage. In the cellar stands the attendant removing the tops and dumping the contents in a container, naturally with the cover removed and containing the contents of previous cans, emitting nasty odors and too often collecting flies. By his side is the delivery boy, bringing the meat for the supper. He insists upon the right of way. The cans are removed to make place for the meat. The dumb waiter that went down at 5:46 loaded with the family's refuse comes up at 5:47 bringing the family's supper.

Present-day garbage handling methods in large cities are far from what they should be. Too often the dumb waiter shaft becomes permeated with odors from the decomposing matter that passes through it so frequently. It is a permanently smelly place.

The advantages of incineration in the home are manifest. With facts to show that in adopting it the householder is not taking upon his shoulders an additional cost, but merely transferring a current cost, the possibilities for pushing this branch of the business should be bright.

Frittering Away Future Prosperity

He who keeps his ear to the ground can learn something new every day. Had some one entered our office and declared a company with a capacity to meet the demand, though it might require a little speeding up, had turned down an opportunity to add six million cubic feet to its annual sales, we would have at least been skeptical.

Just such conditions have come to our attention. Some few companies have turned down industrial business that was literally handed to them on a silver platter, fearing lest they might cut into their precious reserves.

Several times have we pointed out in these columns the exceptional opportunities existing conditions have furnished us to establish our industrial business on a sound and flourishing basis. Tremendous quantities of manufactured products are needed. The possible output is limited not by the quantities of raw material available, but the facilities for turning it into the finished product.

Manufacturers who ordinarily would not think of installing gas, whether through lack of education as to its advantages or through hesitancy in regard to its cost, will leap at the chance to buy gas burning equipment even though it be merely on the principle of "anything to do the work."

We have preached the material side because that is the one that obtruded itself most strongly upon our vision, and we wanted to be frank. But we could not fail to sense the patriotic side as well.

All of the industries of the country are one, in a sense, at the present time. Their business is to provide equipment for the armed forces. In supplying the manufacturer with facilities for increasing his output, we are also decreasing the number of American names that will appear on the casualty lists that must inevitably come.

Those managements which have hesitated and balked at the prospect for cutting into their reserves did not think of it in this way. It is true nevertheless. By not furnishing those six million cubic feet of gas, which they could, had they been willing to speed up, they are restricting to an extent their country's output of munitions of war, adding a few names that otherwise would not have been there to the casualty lists and delaying under arms for a few more days hundreds of thousands of men whose tastes and best talents incline them to civil pursuits.

Besides, if we do not put gas on the map in the industrial field now, it will take years in the future to accomplish what could have been accomplished in a very few months.

Publications

Gasteam Broadside

Advertising literature issued by James B. Clow & Sons, Chicago, Ill. "Broadside" mailing folder, size folded, 12½ x 6½ in., opened size 28 x 38 in., printed on white coated paper, in blue and orange ink. Catalog, size 6 x 9 in., 18 pages, illustrated, cover printed in orange and blue.

The "Broadside" is a striking appeal to dealers and new business men, attractively illustrated, showing many of the newspaper electrotypes and complete advertisements of varying sizes, which James B. Clow & Sons offer to the gas companies handling the Clow Gasteam Radiators. On one page, entitled "Getting Velvet Revenue in Gas Heating Business," the cover of the Salesman's Handbook is reproduced in exact size, and something of the advertising service is told which this company has worked out from the standpoint of "human interest."

The front and back cover of their radiator catalog is also reproduced in full size and colors, and the offer of furnishing these catalogs in reasonable quantities to gas companies is made. On the same page the "Little 'Scout' Circular" is explained, which consists of a circular intended for office distribution and mail enclosure. Four window displays are also suggested, these likewise having a very human appeal.

Movie slides, gas bill stickers and window cards, each illustrated and described, complete the plan of one of the most logical and convincing advertising service campaigns that has ever been laid before the gas man.

The Clow Gasteam Radiator catalog which is issued in connection with the "Broadside" in the reviewer's opinion strikes such a human interest note that it can hardly be classed as a catalog. The prospect's mind seems to have been analyzed and his attention is picked up from the point where it most naturally rests at this time of year, by giving a practical answer to the question, "Why not heat my house with gas?" The reader, having thus been brought to the right frame of mind, is shown the various types of Clow Radiators, each illustrated and described. The construction is given in detail, and an interesting temperature and humidity chart is shown. Convincing evidence in actual bills of some of the installations, testimonial letters and photographs of many stores, dwellings and public buildings equipped with Clow Radiators, clinches the catalog's argument.

The Wet Thiogen Process for Recovering Sulphur from Sulphur Dioxide in Smelter Gas

U. S. Bureau of Mines Bulletin 133. Paper-bound; 62 pages; illustrated. Author, A. E. Wells. Obtainable from the U. S. Bureau of Mines, Van H. Manning, director, Washington, D. C.

A critical study of the wet Thiogen process for extracting sulphur from the smoke of smelters is one of several investigations related to the general smelter-smoke problem that are being conducted under the direction of the Bureau of Mines. Part of the work done in the pyrometallurgical section of the co-operative metallurgical exhibit of the Bureau of Mines at the Panama-Pacific International Exposition during 1915 related to this investigation, and at the expiration of the exposition, the work was continued in the laboratories of the Bureau of Mines in the Hearst Memorial Mining Building of the University of California, Berkeley, Cal.

Early in the spring of 1915, when plans were being made to co-operate with several metallurgical interests, the Thiogen Company proposed to the Bureau of Mines that, along with the studies of various proposed methods for eliminating sulphur dioxide from smelter smoke, there should be included a study of the wet Thiogen process. In the study as outlined it was proposed to determine whether it would be technically and commercially feasible to use the process for the recovery of elemental sulphur from the sulphur dioxide in waste smelter gases.

Although there had been no large-scale work with the process, either in the laboratory or at a smelter, representatives of the metallurgical and mining industry had shown considerable interest in the proposed method, and the desire had been expressed that a better knowledge of the possibilities of the process should be obtained. Thus, co-operation with the Thiogen Company seemed justified by the interests of the metallurgical industry, and by the conservation promised by the recovery of a product of market value from what is otherwise a waste, and in some instances a serious nuisance.

In accepting the responsibility for directing this investigation, the officials of the Bureau of Mines were necessarily free to conduct the work in the manner they considered necessary to determine the facts. It was also understood that any information obtained was to be made available to all who might be interested and might be printed in a Bureau of Mines report. To cover the cost of laboratory equipment and supplies, and the payment of salaries of assistants, other than Bureau of Mines employees, the Thiogen Company in May, 1915, deposited with the co-operative metallurgical exhibit fund a sum sufficient to start the laboratory investigation.

In outlining the program for this investigation it was hoped that ultimately a small complete plant would be erected and the investigation center around the operation of the plant. However, preliminary to the erection of the plant, a laboratory study of the process was considered necessary, as the technical features of the process could be determined, it was believed, as satisfactorily on a smaller scale as on the scale first proposed. However, it was realized at the time that it would not be possible to determine so satisfactorily or definitely the commercial possibilities of the process on the scale of work adopted as in the larger operating plant. With this fact in mind, it was planned that, if the study of the technical features on a laboratory scale gave sufficient promise of the process being commercially feasible, an operating unit should, if possible, be constructed later, and that more definite information concerning the commercial prospects should be determined.

The investigations were started in June, 1915. In June and July work was confined entirely to small-scale laboratory tests, in which a careful study of the chemical reactions involved was made. In August, tests on a larger scale were started, and these were continued until December, small-scale tests being made at the same time.

On December 1, 1915, all work on the Thiogen process was discontinued temporarily until January, 1916. It was continued during the spring of 1916 until a point was reached where it was felt that the essential parts of the process had been carefully covered, and that some definite statements concerning the technical features and possibilities of the process, as given in this report were warranted.

News of the Gas Industry

Newly Made Increase Lowered at New Bedford, Mass.

In compliance with directions issued by the Board of Gas and Electric Light Commissioners, the New Bedford Gas & Edison Light Company has announced that the 95-cent gas rate which went into effect on August 1 has been cancelled and the company will give a net rate of 90 cents, an advance of 10 cents over the old schedule. The excess charged during August over the 90-cent rate will be refunded to customers or due credit will be allowed on the next bills.

The gas company sent communications announcing the change to Mayor Ashley and Councilman Eugene E. Barthelemy of New Bedford, who has been carrying on a campaign against the jump in the price of gas. Oliver Prescott, president of the company, stated in the letter to Mr. Barthelemy that the corporation will not contest the ruling of the commissioners at this time but will give the 90-cent rate a fair trial.

Southern Counties Gas Company Asks that Debenture Order Be Nullified

The Southern Counties Gas Company of California has filed with the Railroad Commission an application for setting aside the commission's order of July 5 last, authorizing the company to issue $298,000 6 per cent ten-year debentures, the proceeds to pay open accounts and notes, and to reimburse the company for capital expenditures. The Southern Counties Company, in its application, says that it is inexpedient to issue or sell any debentures now, and it wants its previous application for permission to issue them nullified.

Lima Council Denies Increase

The city council of Lima, O., in recent session refused the Lima Natural Gas Company's petition to increase gas rates 5 cents per 1,000 cubic feet in order to provide two additional pumping stations between Lima and the Medina gas fields.

New Company Organized in California

C. S. S. Forney, former president of the Central California Gas Company, now in the hands of the receiver, has issued a circular letter to the stockholders announcing the organization of a new holding company, having received a charter from the State of Nevada.

The new concern is to be known as the Western Gas & Power Company, and it is possessed, according to the circular, of the following directors: Charles S. S. Forney, William H. Metson, Dr. J. Mulgaard and Bradley V. Sargent.

Mr. Forney offers the stockholders of the Central California Gas Company to exchange their stock, share for share, for the new stock of the Western Gas & Power Company, which he says is non-assessable, fully paid, and which carries no stockholders' liability.

The terms of the proposed exchange are stated as follows: For each two shares of Central California Gas Company's stock turned in the holder will be entitled to one share of 8 per cent prior preferred stock and one share of 7 per cent participating preferred stock of the Western Gas & Power Company. The transfer will be made at the Anglo-California Trust Company.

In concluding the circular says:

"Each and every stockholder of the Central California Gas Company, large or small, get the same deal under this arrangement, and I am gratified that we have been able to secure the co-operation and assistance of Charles F. Leege and Dr. J. Mulgaard in formulating and carrying out a plan which conserves your investment and will protect you against loss and which will enable you to receive all profits which your investment earns."

Boston Gas Output Shows Increase for August

The Boston Consolidated Gas Company's August output was 418,437,000 cu. ft. of gas, an increase of 9.4 per cent, as compared with August, 1916.

Indiana Commission Finds Gas Companies' Petition Just and Reasonable

One of the most highly interesting decisions that has come from the Public Service Commission of Indiana in years was that which has just been entered of record, in which the Central Indiana Gas Company, supplying the cities of Anderson, Alexandria, Elwood and Marion, Ind., was allowed to increase its former rates for gas in Indianapolis and authorized to increase its supply of natural gas from the West Virginia field by the resurrection of the former artificial gas plants in these cities. The petition, asking for authority to promulgate rates and rules for the new mixed gas service was the first of the sort, which has come before the Indiana commission, with the exception of a minor case at Vincennes, Ind.

The vital part of the commission's order follows:

Rule 1. The discount stated in the schedule of rates and discounts hereinafter set forth will be allowed only upon payment of monthly bill within ten (10) days after its date, and the rates and discounts fixed in the schedule are based upon monthly consumption.

Rule 2. If the sum which would be payable by any consumer for consumption in any month, computed in accordance with the schedule of rates and discounts hereinafter set forth and Rule one (1), be less than one dollar ($1.00), a minimum or readiness to serve charge of one dollar ($1.00) will be made, which will cover payment for gas actually consumed.

Gas Used to Test Aero Motors

The Hall-Scott Motor Car Company of Berkeley, Cal., is rather well known throughout the world for its manufacture of combustion engines. The engine turned out by this firm has been adopted by all the Allied governments for use in aeroplane work. These engines are tested by gas before being finally assembled, each test stand using 1,000 cu. ft. of gas per hour, and ten of these stands are now in use. Gas again proves its reliability and convenience in this form of testing.

Atlanta Restaurants Prepare for Army with Gas

The coming of hungry soldiers in hordes is foreshadowed by recent gas installations in Atlanta, Ga., restaurants.

Gas sales department records for the past month show among others the following: Folsom's restaurant, 134 Peachtree, one restaurant range, one cake griddle; Venable's restaurant, 86 Peachtree, one cake griddle, one oyster stewer; Kimball House, one hotel range; E. Basil, 8 Decatur, two cake griddles.

Installation of a No. 215 Blodgett bake oven in Cox College, at College Park, also is reported.

Other installations include one No. 101 Johnson furnace, in the plant of the American Canning Corporation, 78 Auburn avenue; one gas forge (their second), Southern Saw Works, East Point; one No. 101 Johnson furnace, General Electric Company, 8 Courtland Street; and one No. 101 Johnson furnace and a blow-torch.

Byllesby & Company Have Nineteen Men in Government Service

The contribution of H. M. Byllesby & Company to the Government in men includes one brigadier-general, one captain, three first lieutenants, one second lieutenant, four unassigned officers in the officers' reserve camps, one wireless operator, five privates in the army, one chief yeoman and two yeomen in the navy. The men and their positions with the company and their service ranks with the Government are shown in the accompanying lists.

A compilation of men now serving the Government, who have formerly been employed at the Byllesby Operating Properties, is being made.

Name	Position & Dept.	Service Rank	Department of Service
George H. Harries	V. P.	Brig. General	U. S. Nat'l A.
Warren R. Thompson	Mgr. Eng.	Captain	U. S. A. Engineers
C. A. Bessey	Asst. Eng.	1st Lieutenant	U. S. A.
R. T. Purchas	Asst. Pur. Eng.	1st Lieutenant	U. S. Aviation
A. H. Sayce	Asst. Mgr.	Unassigned	2nd Off. Reserve
A. F. Hogan	Draftsman	2nd Lieutenant	U. S. A.
C. E. Noerenberg	Engineer	Unassigned	2nd Off. Reserve
Arthur H. Kuhn	Engineer	Unassigned	2nd Off. Reserve
A. J. St. Aubin	Draftsman	Lieutenant	Off. Reserve Corps
Harold Gore	Clerk	Wireless Op.	U. S. A. Signal Corps
T. E. Sanford	Draftsman	Amb. Steward	U. S. A. Med. Corps
E. K. MacDonald	Bond Salesman	1st Lieutenant	U. S. Aviation
Arthur Carstens	Steno.-Audit	Chief Yeoman	U. S. Navy
Harry McKeon	Clerk-Audit	Yeoman	U. S. Navy
C. H. O'Reilly	Clerk-Fin.	Private 1st Class	Quarter. Corps
Ben Hammer	Clerk-Fin.	Yeoman	U. S. Navy
John J. Nolan	Clerk-Publ.	Private	2 Regt., I.N.G.
Will J. O'Farrell	Messenger	Private	2 Regt., I.N.G.
Edward Schellhorn	Messenger	Private	11 Regt., I.N.G.

Coal Situation Resolutions Receiving President's Attention

The coal situation throughout the country is still receiving the personal attention of President Wilson. This was made known in a letter from the President sent last week to Samuel Insull, chairman of the Illinois State Council of Defense in response to resolutions sent to the President by the conference of governors and state councils of defense held in Chicago on Aug. 23.

The President's letter follows:

"My Dear Mr. Insull:

"The very important and thoughtful resolutions adopted by the conference of state councils of defense have reached me and I beg to assure you that they will receive my most careful consideration.

"I feel confident that they will commend themselves in principle to all who are co-operating with me in the business of administering the fuel supply of the country.

"I am placing them in the hands of Mr. Garfield, whom I have asked to act for me in this exceedingly important business."

The resolutions urged that drastic measures be employed to stimulate production of coal, to increase transportation facilities and that the northwest in particular be given adequate coal supplies. They further recommended that the price to the consumer be immediately fixed in order that distribution may be made equitably in all parts of the country.

The local coal market is chaotic at present, both as to price and supply. Warnings of a serious coal famine in Illinois during the coming winter have been sounded by Chief Justice Carter, who resigned as coal dictator of Illinois when the President named a price for coal at the mine mouth. Large users of coal in Illinois, among whom are included most of the state's gas producing companies, are urged to use Illinois coal as far as possible in order to conserve railroad equipment. Heretofore Illinois consumers have used much coal from other states while much Illinois coal was exported to other states.

The state of Illinois has the power to seize and operate the coal lands of the state, but to exercise this power legislation is required, according to a ruling by Attorney General Brundage of Illinois made public on Sept. 1. The ruling was made for the guidance of Governor Lowden, who planned to seize the coal mines of the state before the President clarified the coal situation by setting a maximum price to be charged by operators.

In an emergency which demands state control of the mines, says the attorney general, the state can either seize the property under the power of eminent domain or where its control is necessary to prevent widespread suffering it can exercise police power. Provision for such seizure, however, would have to be made by the general assembly.

The stupendous task that the state government would face should it attempt to control the coal output of Illinois may be appreciated when it is known that Illinois is the third largest coal producing state in the country, the output of its mines last year having been 70,000,000 tons. It is estimated the mines of the state have an aggregate value of one billion dollars and that they employ 110,000 men.

Furnace for High-Speed Tool Steel Test Installed at Oakland, Cal.

M. Pappins, 711 Franklin Street, Oakland, Cal., has installed a No. 10 Stewart Gas Furnace for testing high-speed tool steel, as announced by the Pacific Gas & Electric Company. The tempering of tools can be done directly in the factory at a low cost and thereby increase the factory efficiency by keeping tools in good working condition.

THE CITIES SERVICE COMPANY, which recently purchased certain of the Armour oil properties, has incorporated them as the Standard Asphalt & Refining Company, with offices at 208 South LaSalle Street, Chicago. Charles Muller, one of the former executives of the Armour concern, has been placed in charge of the Chicago office.

Scenes Taken at Tenth Annual Convention, Canadian Gas Association, Held in Toronto, Aug. 29-30

THE CANADIAN CONVENTION PARTY PHOTOGRAPHED AS THEY FILLED THE ROYAL CANADIAN YACHT CLUB WHARF AT TORONTO ISLAND

Canadian Gas Association Executive Committee's Report

The report to the members of the Canadian Gas Association, submitted August 29, 1917, is as follows:

As president of the Canadian Gas Association I have pleasure in presenting the report of the Executive Committee for the past year.

There have been two meetings of the Executive Committee, one held at Toronto on March 8, and one in Ottawa on May 18.

You will remember that at the convention held in Quebec City in August, 1916, the question of affiliating with the American Gas Institute was discussed, and was referred to the incoming executive with power to deal with the matter. I have now to report that the committee unanimously decided in favor of this affiliation and the necessary steps were taken to this end.

(*Continued on page 252*)

ON BOARD ONE OF THE ISLAND YACHT CLUB BOATS RETURNING TO CITY AFTER MORNING'S SESSION AND LUNCHEON

GROUP IN ATTENDANCE AT CONVENTION—NOTE GAS LAMP OVERHEAD—TORONTO HAS BEEN MARKEDLY SUCCESSFUL IN ITS LIGHTING BUSINESS DESPITE EXTREMELY LOW ELECTRIC RATES.

Affiliation with the Institute does not involve any financial obligation on the part of the Canadian Gas Association, and any member of the Canadian Gas Association may become an affiliated member of the Institute on payment of an annual fee of $2.00, with the privilege of attending the annual meetings of the Institute and of receiving regularly a copy of the American Gas Institute News, the official bulletin of the Institute.

It will be necessary for any member of the Canadian Gas Association desiring to affiliate with the Institute to have his application endorsed by the secretary of the Canadian Gas Association before forwarding same to the Institute.

By the terms of the Constitution and By-laws of the American Gas Institute affiliated associations are entitled to elect one representative to the Board of Directors, and your committee have appointed as this association's representative, Howard E. Mann, engineer of the Montreal Light, Heat & Power Company.

The coal situation has been carefully considered and action taken in regard to some of the respects in which gas companies have been suffering disadvantage. A communication was addressed to the chairman of the Railway Commission, calling attention to the seriousness of the situation in which gas companies found themselves in regard to coal supply, and urging upon the commissioners that railway companies be positively forbidden to confiscate coal consigned to Canadian gas undertakings.

Your committee has also taken up with the Minister of Finance the question of placing a limit upon the war tax upon coal imported for gas making purposes. It was pointed out that the 7½ per cent upon the price of bituminous coal at the mines when the tax was first applied amounted to approximately 9 cents per ton, but that on account of the tremendous increase in the price of coal this tax had eventually reached nearly 40 cents per ton.

The deputation which waited upon the Minister consisted of Messrs. King, Norris, Hewitt, Dion, McIntyre, Gardener and Allen, and was given a very cordial reception by Sir Thomas White, who promised to give the matter serious and sympathetic consideration.

This deputation also waited upon Sir Henry Drayton, chairman of the Railway Commission, in regard to the difficulty of getting the railway companies to deliver coal to a number of the smaller Ontario gas companies.

They also discussed with him other difficulties with which they were surrounded in connection with the matter of securing coal in sufficient quantities for their own purposes.

When it became known to your Executive Committee that the National Commercial Gas Association had decided to hold their next convention in the city of Detroit, Michigan, the committee unanimously decided to hold the meeting of the Canadian Gas Association at the same time in Detroit. After the entry of the United States into the war it was finally decided by the directors of the National Commercial Gas Association to cancel the arrangements for their meeting, and this action, of course, necessitated a change in the plans of the Canadian association, and rather than allowing the year to pass without an opportunity being afforded for the members to meet together, it was finally decided to call a meeting in Toronto for Wednesday and Thursday, August 29 and 30.

The following new members have been enrolled during the year: G. Porter, manager Vancouver Gas Company, Vancouver, B. C.; William Williams, Sarnia Gas Company, Sarnia, Ont.; I. Irminger, engineer Wests Gas Improvement Company, Ltd., Westmount, Que.; P. V. Byrnes, president United Gas & Fuel Company, Hamilton, Ont.; Frank Elcock, superintendent gas works, Ottawa Gas & Electric Company, Ottawa, Ont.; Hubert Osler, superintendent Station B, La Salle plant, Civic Investment & Industrial Company, Montreal, Que.; Wilford Phillips, general manager Winnipeg Electric Railway & Gas Company, Winnipeg, Man.; Thomas Dunderdale, superintendent gas department, Winnipeg Electric Railway & Gas Company, Winnipeg, Man.; L. C. Haskell, secretary-treasurer The Southern Canada Power Company, Ltd., Montreal, Que.; Harold Jarvis, manufacturer water heaters, 475 Yonge Street, Toronto; Harry W. Braden, assistant superintendent Dominion Natural Gas Company, Bank of Hamilton Building, Hamilton, Ont.; William Kirk, manager Forge Wayne Machine Company, Toronto; S. J. Halls, sales manager Victoria Gas Company, Victoria, B. C.; E. H. Caughell, manager City of St. Thomas Light & Power Department, St. Thomas, Ont.

Your Executive Committee desires to express the hope that the coming year will be one of prosperity for the association and for the gas industry in Canada.

The Committee recognizes with much pleasure the efficient services rendered to the association by its secretary, George W. Allen.

Your Committee further desires to express its appreciation to the proprietors of the *Canadian Gas Journal* for their assistance and cooperation in publishing, from time to time, in its columns a bulletin of the association's activities.

All of which is respectfully submitted.

Rushing Gas Supply for Los Angeles Naval Station

President Christopher M. Gordon of the Harbor Commission and Attorney Leach of the Harbor Department held an important conference with the city attorney on the matter of the service of gas to the naval station and industrial works at the inner and outer harbors.

The Southern Counties Gas Company has a permit to go ahead with the work of building the gas pipeline to the outer harbor to afford immediate service to the naval station. Mayor Woodman recently declared he intended to make every effort to rush a guaranteed gas service to the naval station in the outer harbor.

"Then we'll take the matter of getting a fixed price to the State Railroad Commission for settlement," said the mayor, "for the big thing now is to get the line rushed to completion so the naval men, more than 1,200 of them now, may have the use of the gas supply for heating, for cooking and for light.

"The price, at least temporarily, will be 30 cents per 1,000 cu. ft., but I understand that the railroad commission will be asked to make an industrial rate of 25 cents."

California Company's Capital Stock Assessed

At a recent meeting the Board of Directors of the Central California Gas Company levied an assessment of $20 a share on the 2,465 shares of capital stock now outstanding. This assessment, aggregating $49,300, is payable immediately. It becomes delinquent on September 25, with October 8 named as salesday.

Brazil, Ind., Company Granted Increase by Commission

The Public Service Commission of Indiana has shown again that it is not afraid to " face the music " and raise gas rates, when a company is operating at a loss. The test this time came because of the petition, filed May 22, 1917, before the commission by the Brazil Gas Company, of Brazil, Ind., asking for authority to increase rates. The commission has just entered an order, which contains many interesting discussions of present day gas problems, and approves the petition of the Brazil company for relief. The order allows the company to increase its rates to domestic consumers from $1.15 per 1,000 cu. ft., net, to $1.40 per 1,000 cu. ft. net.

Advances of prices of coal and labor were the big factors the Brazil company would have been forced to meet this winter, unless relieved by increased rates from the commission.

While the high price of coal constituted the greatest single disturbance of the operating basis in this case, as the commission's order points out, " the petition is not based primarily on the present coal situation, but on two years' operation of the plant and service by the present owners, and on losses on the basis of normal prices." The prayer of the petition was for a permanent readjustment of rates to stop losses.

That the gas service in this city —which is in the heart of the coal district and where electric rates are cheap—because of a great interurban system that operates through the town and has a sub-power station there—is " pressed by competition " also was pointed out in the order. This fact " will in itself tend to restrict and regulate gas rates," the order pointed out.

The new rates as taken from the order are as follows:

Quantity	Gross Rate per 1,000 cu. ft.	Discount per 1,000 cu. ft.	Net Rate per 1,000 cu. ft.
First 5,000	$1.50	10c	$1.40
Second 5,000	1.40	10c	1.30
Next 10,000	1.20	10c	1.10
Next 10,000	1.10	10c	1.00
All over 30,000	1.00	10c	.90

Minimum monthly charge for 3 and 5 light meters, $1.00.
Minimum monthly charge for 10 and 20 light meters, $1.50.
Minimum monthly charge for 45 light meters, $2.00.

It is further ordered, that the above rates and discounts are based upon monthly consumption, and that discounts are allowed upon payment of monthly bill within ten days from the date of bill.

Sheboygan, Wis., Company Increases Rates

The Sheboygan Gas Light Company has applied to the Railroad Commission of Wisconsin for permission to increase its rates.

When asked about the proposed increase, Arthur F. Davey, manager of the company, willingly explained the matter in detail. Mr. Davey said:

" The Sheboygan Gas Light Company is forced by the great increase in cost of coal and other supplies and equipment used in connection with the gas business and by the increased cost of labor to ask for a temporary increase in the price of gas, to be in force only during the present emergency. The company has tried to economize in every way possible and keep down the high cost of producing gas, but the cost of coal has increased tremendously.

" The increased cost of living has made it necessary for the company to protect its employees by giving them higher wages. These production costs have been increasing constantly for more than a year, but the company has tried to get along without increasing the rates until the present time when such increase is absolutely necessary to its financial safety, as all of the net earnings above interest charges on the bonds will be consumed by the present excess cost unless higher rates are granted. The basis of the increase now asked for is based entirely on the cost of coal. The company offers to stand the increased wages and all other increased expenses except coal, thereby sharing with the consumer the increase in costs.

" The present schedule of prices for gas in Sheboygan was fixed by the Railroad Commission of Wisconsin in 1912, after a full examination of the company's affairs. These rates were based on coal at approximately $3.50 per ton. The present cost of coal is $6.13 per ton. When figuring the increased cost of gas, credit has been given for the increased price of coke which is now in effect, and this assists in offsetting the high price of coal, as 900 lb. of coke are obtained from 2,000 lb. of coal.

" The Sheboygan Gas Light Company has, under its present ownership, greatly improved its plant and distribution system. A large amount of money has been spent for this purpose. The mains have been extended and new business taken on in all portions of the city. The gas machinery at the plant has been overhauled, new machinery installed where needed and everything kept up in the best possible working condition.

" The business of the company in Sheboygan has shown a very satisfactory increase, and it is only because of this increase that the company is able to, itself, absorb the increased cost of labor and everything else except the increased cost of coal. Should the efforts of the United States Government be successful in reducing the cost of coal, this will take immediate effect in reducing the cost of gas."

California Commission Fixes Los Angeles Rate

The Los Angeles rate, as fixed by the Railroad Commission, is reported to be the lowest gas rate in the state with the exception of those in Bakersfield and Santa Ana and other cities located in or near the natural gas fields. The rate is 68 cents.

Other cities affected in the decision are Pasadena, South Pasadena, Alhambra, Glendale, Huntington Park, Inglewood, Tropico, Eagle Rock, Watts, San Fernando, San Marino, San Gabriel, Burbank, Compton, Burnham and unincorporated territory adjacent. The rates in these places have been fixed on the block schedule system, ranging from 85 down to 40 cents.

The concerns affected are the Los Angeles Gas & Electric Corporation and the Southern California Gas Company.

The commission fixes a minimum rate, none having existed before. The minimum is fixed at 50 cents for residence and domestic service and 35 cents for apartment service throughout the entire territory served by the two gas companies.

The decision is the result of many months of investigation. More than a year ago the Los Angeles Gas & Electric Corporation and the South-

Bituminous Coal Report

According to the weekly report on the production of bituminous coal and the causes of loss of working time, compiled by the Geological Survey, Department of the Interior, Aug. 25, 1917, the ratio of tonnage produced to full-time output continued to declined during the week ended Aug. 11. Mines representing more than one-third of the output of the country produced 71.8 per cent of their combined full-time capacity as limited by the present labor force. The index not only fell below the level of the preceding week (73.0), but reached the lowest point attained since June 1 when the system of weekly reports was begun. Iowa, Illinois, Ohio, Kansas, and Missouri, declined; Alabama, Southwestern Virginia, and Western Pennsylvania held their own; while Eastern Kentucky and Tennessee recovered to some extent from the depression of the week before.

The record of cars of coal loaded on roads representing more than half the shipments of bituminous coal shows a drop of 4 per cent in the week ended Aug. 18, compared with the week ended Aug. 11, but an increase over the low record of Aug. 4. The general downward tendency in the rate of production that has been manifested since the middle of July was resumed last week, after a slight gain in the week ended Aug. 11, in all districts shown except Illinois and Indiana. The slump in Pennsylvania and Ohio is particularly to be noted. A strike in the Southern Appalachians decreased shipments from Eastern Kentucky and Eastern Tennessee nearly 20 per cent.

Decision on La Crosse, Wis., Rates Favors Gas Company

The effect of a decision of the Wisconsin Railroad Commission recently, disposing of the application of the Wisconsin-Minnesota Light & Power Company for a rate increase which was argued both at LaCrosse and Madison recently, is an advance of 10 cents per 1,000 cu. ft.

The company asked for a 6 cent increase for every dollar more than coal costs them above normal. The commission, instead, gives them a flat 10 cent increase to stand until next April, unless changed conditions cause a reduction in the meantime. The board reserves the right to re-open the case and change the order at any time.

The important ruling of the decision is as follows:

"That the applicant, the Wisconsin-Minnesota Light & Power Company, be and same is hereby authorized to put in effect in LaCrosse an increase of 10 cents per thousand cubic feet of gas, subject to the conditions imposed in this order.

"This emergency rate shall remain in effect until April 1, 1918, unless sooner amended or revoked by order of the commission, and the commission retains jurisdiction to take such action amending or revoking the emergency increase herein authorized as may appear necessary and proper. The emergency increase herein authorized shall be discontinued on April 1, 1918, unless upon further showing by the utility its continuance for a further limited period shall appear reasonable and necessary.

"The increase herein authorized may be put into effect so as to apply to all gas used subsequent to the meter reading next following the date of this order."

The application of the Wisconsin-Minnesota Light & Power Company was for a schedule increase depending upon the price paid for coal. The utility asked for a 6 cent increase for each dollar paid for coal in the two calendar months preceding the months in which the meter is read, above $4.50 per ton. In the decision of the commission this rate was not adopted for the reason that the commission believes that it would be variable."

Discussing the city's contention that the added price of coal was offset by the increased prices received for coke and other by-products, the commission declared that the latter increase was insufficient to reimburse the company for the increased costs of fuel.

The order cites figures on coal cost furnished by the company, which show that for 1916 the average cost of coal for making gas was $4.60 a ton at the plant. Since April, 1917, it is declared, the cost has greatly advanced and there is no prospect of a reduction.

THE PUBLIC UTILITIES COMMISSION of Iowa has asked permission of the Illinois commission to participate in the deliberations of the Illinois and Indiana public service commissions affecting the petitions of railroads for a 15 cent increase per ton on interstate freight rates on coal, coke and iron ore.

Gasoline from Natural Gas

Statistics just completed under the supervision of John D. Northrop, of the United States Geological Survey, Department of the Interior, show that the year 1916 was one of marked expansion in the natural-gas gasoline industry in the United States.

The quantity of raw gasoline extracted from natural gas, including that produced by the compression and absorption methods, as well as that obtained by the use of vacuum pumps and recovered as drips from gas-transmission lines, and sold in that year was 104,212,809 gal., a gain of 38,848,144 gal., or 59 per cent over the output in 1915. The quantity of commercial gasoline represented by this output of raw casing-head product, though not susceptible of actual determination, was probably more than 200,000,000 gal.

The average price received in 1916 for the unblended product at the sources of production was 14 cents a gallon and the market value of the entire output was $14,408,201, a gain of 6 cents in average unit price and of $9,257,378, or 180 per cent in total value, compared with 1915.

The volume of natural gas from which this quantity of gasoline was recovered is estimated at more than 208,800,000,000 cu. ft., the average recovery of gasoline per 1,000 cu. ft. by all methods being about half a gallon.

The number of plants for extracting gasoline from natural gas increased from 414 at the beginning of 1916 to 594 at the end of the year, a gain of 43 per cent, whereas the combined daily capacity of all plants increased from 232,336 to 484,448 gal., or about 108 per cent.

The following table shows the sources of casing-head gasoline produced in the United States in 1916:

Gasoline Extracted from Natural Gas and Sold in 1916

State.	Number of plants.	Quantity. Gallons.	Value.	Average recovery of gasoline per 1,000 cubic feet. Gallons.
Okla.	116	49,079,722	$5,942,198	1.968
W. Va.	147	18,765,056	3,025,293	.179
Cal.	26	17,158,754	2,293,822	.691
Pa.	195	9,714,926	1,726,173	.252
Ohio	53	2,638,571	470,804	.485
Ill.	32	2,260,288	262,664	1.688
La.	7	2,113,159	269,564	2.329
Tex.	4	1,292,811	201,023	1.363
Ky.	5	725,467	141,347	.129
Kans.	3	215,000	35,030	.132
N. Y. } Colo.	6	249,055	40,283	2.422
	594	104,212,809	14,408,201	.499

Great Increase in Illinois Coal Production Is Shown in State Report

Evan D. Johns, director of the Illinois state department of mines and minerals, has just issued a report indicating that in only 179 working days of the fiscal year of 1917 the mines of Illinois produced 78,945,905 tons or 15,000,000 tons more coal than during the entire fiscal year of 1916.

Southwestern Gas Company to Continue Service

According to Attorney George Burke, who has returned from Brenham, Texas, where he went to petition for a receiver for the Southwestern Gas Company, the plant is running and will continue to operate either until there is a suitable chance to sell or until some reorganization plan is adopted by the bondholders. G. Moran was appointed receiver of the plant, in which Ann Arbor citizens have $90,000 worth of bonds and Detroiters $40,000.

Orders were obtained compelling the officers of the Southwestern Gas Company to turn over to the receiver all books, papers and records of the company.

Rate Increase by Meriden, Conn., Company

The Meriden Gas Light Company and the Meriden Electric Light Company have both announced increases in lighting, power and industrial rates effective with the October bills. The increase in electric lights is one cent per k. w. hour and about a half cent on power; on gas it is fifteen cents per 1,000 cu. ft. for lighting and in proportion on a sliding scale for industrial purposes.

General Manager C. A. Learned stated that these increases have been forced on the companies owing to the greatly increased costs of coal, taxes, labor, material and all supplies that enter into the manufacture of either gas or electricity. In nearly every case these costs have been increased enormously, particularly that of coal, oil and labor for gas and coal and labor for electricity.

The new rates are to go into effect after the reading of meters in August. September bills will be at the old rates and all bills on or after October 1 at the new rates. The new rates for gas show a sliding scale for quantity starting at $1.35 for the first 20,000 cu. ft. per month down to $1 for all over a half million feet. A discount of ten cents per 1,000 ft. is allowed for payment by the tenth, however, making the net rate for the ordinary small consumer $1.25 per 1,000 ft. This new scale is as follows:

NEW GAS RATES

	Gross Per M Ft.	Net Per M Ft.
First 20,000	$1.35	$1.25
Next 30,000	1.25	1.15
Next 50,000	1.15	1.05
Next 200,000	1.10	1.00
Next 200,000	1.05	.95
All over 500,000	1.00	.90

The Meriden companies are later than a number of other cities in announcing an increase. Hartford, Bridgeport and Wallingford put increased rates in effect on July 1. New Britain, New Haven and Derby have announced increases in effect October 1 the same as Meriden.

Personal Notes

THOMAS G. LANSDEN, formerly engineer with the Washington (D. C.) Gas Light Company, died recently at St. Louis, Mo. Prior to going with the Washington company, Mr. Lansden was engineer with the former St. Louis Gas Company, now a branch of the Laclede Light Company of St. Louis, Mo. He was also one of the founders of the former Western Gas Association, and a past president of the association. This journal is indebted to Frederic Egner, retired consulting engineer of Washington, D. C., who personally knew Mr. Lansden, for the foregoing information.

FRANK H. EVANS, formerly in charge of the commercial department of the Wisconsin-Minnesota Light & Power Company at La Crosse, which position he resigned July 1, has accepted a similar position with the Eastern Wisconsin Gas & Electric Company at Fond du Lac, Wis., and his offices will be located in the Public Service building.

J. ROBY PENN, president of the Illinois Pipe Line Company, has resigned that position to become connected with the Midwest Refining Company, with headquarters at Casper, Wyo.

JOHN W. ST. JOHN, secretary and treasurer of the Madison (Wis.) Gas & Electric Company, has been appointed assistant general manager of the St. Paul (Minn.) Gas Light Company, and will assume his new duties Oct. 1. His successor has not as yet been named. The appointment is in the nature of a promotion inasmuch as the American Light & Traction Company, New York, controls both the property at Madison and St. Paul. During his residence in Madison Mr. St. John has been prominent in civic and commercial activities. Mr. St. John started with the Madison company in 1908, previously being with the Muskegon (Mich.) Light & Traction Company, another American Light & Traction Company property.

WILLIAM C. DAVENPORT was re-elected president of the Taunton (Mass.) Gas Light Company at a recent meeting.

DEWITT CLINTON, treasurer of the Worcester (Mass.) Gas Light Company, was elected a director of the company, succeeding Thomas B. Eaton, who died recently.

G. H. CRESSLER, consulting engineer of Chicago, has been engaged by the Hibbing, Minn., council to draw up plans and specifications for the new municipal gas plant which probably will be located south of the Brooklyn Section. Mr. Cressler, who attended a recent council meeting, has spent several days looking over the grounds and will submit plans shortly.

FRANK J. JORDAN, for the past two years manager of the Stoughton office of the Brockton (Mass.) Gas Light Company, was appointed manager of the Canton office, succeeding Samuel M. Nadell, who has reported for army duty.

ELDRED E. BREESE, mechanical engineer of the Lowell (Mass.) Gas Light Company, has received a commission as first lieutenant of the Officers' Reserve Corps in the ordnance department, and left recently for Washington. He has not as yet been assigned to any post.

E. H. COLLINS, who has been contract agent for the Illinois Northern Utilities Company, DeKalb, Ill., for some time, has been appointed man-

ager of the Greenville (Miss.) Gas Company.

JOHN MCGUINNESS, superintendent of the Suffolk (Va.) Gas-Electric Company, has entered the service of the United States Naval Reserves.

J. H. VIERIG has recently been appointed superintendent of the Public Service Company, St. Cloud, Minn.

I. S. HAYDEN has recently been appointed manager of the Manhattan (Kan.) Gas & Electric Company.

Societies and Associations

THE ILLUMINATING ENGINEERING SOCIETY, NEW YORK SECTION, held a meeting in Room 2 of the Engineering Building, 29 West Thirty-ninth Street, New York City, on Thursday evening, September 13, at 8.15 p. m. A paper on the "Economics in the Operation of Large Lighting Installations," by C. L. Law and J. E. Buckley, was read, after which a description of the method in securing data and making recommendations for lighting installations in office buildings, loft buildings, clubhouses, hotels, etc., was given. Another paper, by W. F. Little and J. F. Dick on the "General Level of Illumination Intensity in Large Department Stores in New York City," was read, discussion of the illumination found in large department stores in New York following.

THE WAR CONVENTION OF AMERICAN BUSINESS MEN under the auspices of the Chamber of Commerce of the United States, at Atlantic City, September 18 to 21, will not be confined to discussions of commercial problems. On one evening Boris Bakhmeteff, Ambassador from the New Russia to the United States, will discuss phases of the Russian situation which are of particular interest to business men and will make suggestions to business men regarding the part which they can play in the development of New Russia. At another session, Lord Northcliffe, chairman of the British Mission, will deliver an address on what American business men may do to aid our allies. Herbert C. Hoover, the Food Administrator, will discuss in detail the policies of the Food Administration, and the possible effect of these policies upon business men. Frank A. Scott, chairman of the War Industries Board, will also speak at the second session on the first day of the convention, Tuesday, September 18, informing business men what they must do to assist the War Industries board in securing the supplies needed for our army. Mr. Scott will explain the constitution of the recently created War Industries Board, and the manner in which this board works, and its relations to the industries of the country in providing munitions and supplies of all sorts for the army and navy. Business men will have an opportunity to discuss from the floor the various problems and the bearing of these problems on their own particular business. It is said men familiar with the particular aspects of food conservation and its effect upon business will be present and take a leading part in these discussions.

THE AMERICAN ASSOCIATION OF ENGINEERS, at a Board of Directors' meeting on September 5, granted charters to the members in St. Paul, Indianapolis and Milwaukee. This makes a total of seven chapters which have been organized since the association was incorporated about two years ago. The total enrollment of the national organization is over 2,200 different members. A joint meeting of the association and the Detroit Engineering Society was held in the Commerce Building Thursday, August 13. It was the unanimous opinion of the engineers present that the Detroit society should form a working co-operation with the American association, as they have been carrying out a similar program locally for Detroit as the other organization has operated in a national way. The Detroit society has a total enrollment of about 700 members, and if this working co-operation is established it will mean the furthering of the work laid out by the Committee on Engineering Co-operation. Membership in the American Association of Engineers is being extended to all technical engineers in military service without payment of initiation fee or dues. This is part of the co-operative plan to keep them advised as to progress in the engineering field and to give them personal assistance upon their return to their professional work.

THE EMPIRE STATE GAS & ELECTRIC ASSOCIATION will hold its regular meeting at the association headquarters, 29 West Thirty-ninth Street, New York City, October 5. The president, Stuart Wilder, and secretary, C. H. B. Chapin, are now making the necessary preparations for the program.

Construction Notes

New Ohio Well is Good Producer

The Ohio Fuel Company has drilled a gas well estimated to be producing 25,000,000 cu. ft. of gas daily on the Gibson Farm in Richland township, Vinton County. This is said to be the largest gas well in Southern Ohio.

Carbon Plant to be Erected at Baker, Mont.

R. H. Deebach, manager of the Gas Products Company of Baker, Mont., says the company has ten cars of machinery on the way for the manufacture of carbon black, a plant for which will be erected at Baker. The plant consists principally of shed 10 ft. wide and 86 ft. long in which suitable apparatus burns the gas and collects the carbon, which is the same as lamp black. It is used for painting and is also in big demand in automobile tires. It is both light and hard and is credited with adding much wearing quality to the rubber.

The first unit will consist of eight sheds and six sheds, and will employ about eight men. This plant will produce 3,000 lb. annually. It is planned to construct four units in time to produce 24,000 lb. annually. It sells at 30 cents a pound and is sold as fast as it can be produced.

New Plant at Ashland, Wis.

A new coal gas plant is under course of construction in the old power house on Prentice Avenue, Ashland, Wis., which will have a capacity of 150,000 cu. ft. of gas per day. The present plant has a 100,000 capacity, so that the total will now be 250,000 cu. ft. This amount will be sufficient to more than supply the needs of the people of the city.